

*Pulsus hominis alterius
explorandi ratio.*

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EVER THE TWAIN SHALL MEET

The interaction of medical science, East and West

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Ever the twain shall meet:
The interaction of medical science, East and West

AN EXHIBITION
AT THE
WELLCOME INSTITUTE FOR THE HISTORY OF MEDICINE

May 1993

NIGEL ALLAN



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INTRODUCTION

It is recorded in the first chapter of the Book of Genesis that God made Man in his own image after his likeness as the crowning glory of his creation. Since man was formed in the divine likeness, God being considered as the source of all truth and goodness, so mankind must possess this inherent goodness not, perhaps, always apparent in a world torn by war and bloodshed, famine and greed.

It is, however, this inherent goodness reflected in the healing activities of mankind which every culture and race has given witness to in all periods of time. This positive element in human nature is seen among the most primitive peoples, developing in different cultures in different ways throughout the world as a thread of continuity linking the brilliant discoveries of the medical sciences of our own time with what has gone before. It is to the further continuance of humanity's wellbeing that the Wellcome Trust has dedicated its resources so that this positive side of human nature may be further stimulated to ever new medical discovery.

This exhibition seeks to demonstrate the interchange of ideas between East and West that have been a mutual stimulant to medical thought in both hemispheres. It was a stimulus based both on the continuity of the medical heritage of the past in its preservation and development within different cultures and the contact between these cultures that gave rise to a synthesis of ideas which has been of mutual benefit to all peoples.

Following the decline of the Roman Empire, when western Europe sank into semi-barbarism, the great corpus of classical Greek medical literature was preserved in the emergent Islamic Empire of the eastern Mediterranean. Here many medical works of ancient Greece were preserved in Arabic translation which would otherwise have been lost. Medical knowledge was further advanced especially in the fields of *materia medica* and alchemy. Under the 'Abbāsid Caliphs, Baghdād became the centre of Islamic science largely due to the high esteem in which Christian physicians were held who acted as translators from Greek into Syriac and Arabic. The preservation and advancement of scientific knowledge in the medieval Islamic world transcended cultural and religious differences, so great was the admiration of the Arabs for the heritage that had been passed to them.

When Europe began to emerge from centuries of political and social

upheaval, the West was again in a position to turn its attention to more positive pursuits for the benefit of its peoples. During the twelfth and thirteenth centuries, European contact with the Islamic world increased, especially following the Crusades, and interest grew in Islamic science in general and the Hellenistic corpus of medical literature it preserved. Many works were translated from Arabic into Latin, resulting in an intellectual summer of Islamic influence in late medieval Europe. Spanish Jews, fluent in Arabic, were the natural intermediaries from East to West of medical and scientific knowledge preserved in Arabic. Further impetus to this intellectual awakening in Europe was given by the invention of printing with moveable type, while the Renaissance followed closely by the Reformation aroused fresh interest in the Semitic languages of the East, particularly Hebrew, the language of the Old Testament.

Trade, missionary activity and finally political exigency brought the great trading nations of the West into contact with the Indian subcontinent. The Portuguese, Dutch and British all came and marvelled at the magnificence of India which was to become the jewel in the British Crown when, in 1858, its administration was transferred from the East India Company. From the early years of Western contact a stream of medical knowledge relating to plants and spices, descriptions of diseases and surgical practices hitherto unknown was brought back to Europe. India in turn benefited from the great developments in the medical world of eighteenth- and nineteenth-century Europe. Hospitals were established and medical colleges set up to provide instruction in the latest medical techniques. Concurrent with this interchange of ideas between the Western system of medicine and those indigenous to India or long extant in the subcontinent, these systems themselves were interacting, particularly the Ayurvedic system of Hindu India and the *Unāni* or Greek system which had come to India with Islam. Today, the Western and indigenous systems coexist, complementing each other without any concept of rivalry or competition.

Similar medical practices are known to have been carried out in different parts of the world quite independently. Circumcision was performed for reasons of hygiene by quite disparate peoples living in hot climates in different parts of the world. Similarly, variolation was practised by the peoples of Asia and Africa where it was realised from time immemorial that those who contracted smallpox and survived never experienced a recurrence of the disease.

The practice of variolation was introduced to Britain in the eighteenth century by the wife of a British ambassador to the Ottoman Porte, who had witnessed it performed at Constantinople. Although it became fashionable for a while, risk of infection lost it popularity. Almost a century was to pass before the West could give the East Jenner's vaccination – the use of cowpox as a thoroughly safe means of immunization against smallpox. Countless numbers in both East and West have benefited since and now smallpox has been eradicated.

Since the seventeenth century the West has been aware of many of the traditional medical practices of the Far East, especially China. Jesuit missionaries, who were held in high esteem by the rulers of imperial China, recorded much of what they witnessed. It is not, however, until comparatively recent times that the ancient medical skills of China, particularly acupuncture, have achieved acceptance in the West. Now medical practices employed from antiquity in China are also used in the West to treat numerous disorders. It was not, however, until the nineteenth century that a serious attempt was made to bring the benefits of Western medicine to the peoples of the Far East when Jennerian vaccination against smallpox was introduced to Macao in 1815. Medical missionaries played a major role in setting up hospitals, dispensaries and colleges for the dissemination of Western medicine and instruction. It was they who saw the need for translations of Western medical textbooks into Chinese and were pioneers in developing a vocabulary to convey medical concepts hitherto unknown to the Chinese. It was to this task of translating medical textbooks that Sir Henry Wellcome gave his financial support. Japan received a large part of her medical heritage from China and it was here that Westerners first saw acupuncture practised. Western medicine in Japan owed much to Philipp von Siebold, the distinguished German physician and scientist whose fascination with Japan is an epic in itself beyond the purview of this exhibition.

I record my appreciation of the expertise of Dr Ken Arnold, Exhibitions Officer of the Wellcome Institute, without whose assistance this exhibition would not have been possible. My thanks are also due to my colleagues, Dr Richard Aspin, Dr Peter Friedlander and Dr Dominik Wujastyk for information regarding exhibits of which they have a special knowledge. Unless otherwise stated, all items are from the Wellcome Institute Library. I am grateful to the authorities at the Oriental and India Office Collections at the

British Library and at the Science Museum for the loan of items from their respective collections. It is hoped this exhibition will illustrate through the richness and diversity of the Wellcome Collections that the pursuit of the advancement of medical knowledge knows no barriers of culture, creed or race but only a cooperation that transcends all human division in the endeavour to improve the wellbeing of humanity. In tribute to the eminent Scots physician and scientist Sir James Cantlie, who spent many years working among the Chinese people, Dr Sun Yat-sen, founder of the Chinese Republic, quoted the well-known words of Rudyard Kipling, words appropriate to many involved in the exchange of medical ideas between East and West through the centuries:

*'Oh, East is East, and West is West, and never the twain shall meet,
Till Earth and Sky stand presently at God's great Judgement Seat.
But there is neither East nor West, Border, nor Breed, nor Birth,
When two strong men stand face to face, though they come
from the ends of the earth!'*

NIGEL ALLAN

Curator of Oriental Manuscripts and Printed Books

FROM WEST TO EAST

THE PRESERVATION OF CLASSICAL
GREEK MEDICINE IN THE ISLAMIC WORLD

Islam has been defined as a 'crossroad of cultures' since it stands at a point of contact between Judaism, Christianity and Islam, between the ancient cultures of the East and West which in turn produced Islam's own distinctive science and culture. This synthesis of ideas was a process which began before the rise of Islam as the inevitable result of contact between different peoples through commerce and trade. With the decline of the Roman Empire and the rise of Christianity, the burden of Greek learning passed from the former to the latter. Under the 'Abbāsid Caliphs, Baghdād became the centre of Islamic science largely due to Christians acting as translators from Greek into Syriac and Arabic at the famous bayt al-ḥikma, 'House of Wisdom' directed by Ḥunayn ibn Ishāq (d. AD 873), a Nestorian Christian priest and physician. The passing of knowledge from one dispensation to another preserved much of the corpus of classical Greek medicine which would otherwise have been lost. In the world of Islam the practical application of medical skills, empirical observation and development, particularly in the field of *materia medica*, further enhanced it until the West was sufficiently civilized to receive once more this corpus of medical literature, apply and yet further develop it into the medical knowledge of Renaissance Europe and later.

Hippocrates

Accepted as the Father of Medicine, Hippocrates was born c. 460 BC. He is acknowledged as one of the greatest clinical physicians of all time. He dissociated medicine from superstition, systematized the empirical knowledge which had accumulated in Egypt and in the schools of Cnidos and Cos, and established inductive and positive medicine. The importance of the Hippocratic corpus was fully appreciated by the Arabs who both translated and thereby preserved much of it and quoted from it in their own writings.

item 1

Undated Greek manuscript transcribed in an early fifteenth-century hand containing, among other works, the *Aphorisms* and the *Prognostics* of

Hippocrates. The *Aphorisms*, Ἀφορισμοί (known in Latin as *Aphorismi*), were commentated on by Galen as well as by other physicians. Several Arabic translations were made including one by Ḥunayn ibn Ishāq entitled *al-fuṣūl*. The work comprises short sentences devoted to general medical science.

The *Prognostics* (Προγνωστικόν), known in Latin as *Prognosticum*, was a popular work to which Galen wrote a commentary. Several Muslim writers also wrote commentaries to this work, known in its Arabic translation as *taqdimat al-maʿrifa*.

Shown here are the final sections of the *Aphorisms* and the beginning of the *Prognostics*.MSL. 60 ff. 11^v, 12^r

Galen

Known in Arabic as Jālīnūs, Galen was born in Pergamon in AD 129. In the annals of medicine in antiquity he occupies a place second only to Hippocrates and from his numerous dissections and observations advanced the knowledge of anatomy, physiology, embryology, pathology, therapeutics and pharmacology. Galen's medical works were particularly admired by all later Islamic physicians who translated them in their original form as well as in summary, commentated on them and wrote works based on them, so ensuring that the authority of Galenic medicine should remain unimpaired until the sixteenth century.

item 2

Undated Greek manuscript copied in a semi-current hand typical of the late sixteenth century containing *Medical Definitions* attributed to Galen. This work, known in its original Greek as Ὅροι ἰατρικοί, was translated into Arabic under the title *Kitāb al-Ḥadūd*. It was cited by Rhazes in *al-Ḥawī* and known to Ḥunayn ibn-Ishāq. In its Latin form it is known as *Definitiones medicae*.

A selection of the 479 medical terms the work describes is shown.

WMS 289 ff. 5^v, 6^r

item 3

Syriac translation of Περὶ κράσεως καὶ δυνάμεως τῶν ἁπλῶν φαρμάκων composed by Galen and known in Latin as *De Simplicium Medicamentorum*

Temperamentis ac Facultatibus. In Arabic translation it is known by a number of titles, the most commonly used being *Kitāb fi al-adwiya* by which title it was cited by Rhazes in *al-Hāwi*. The translation exhibited is that of Sergius of Rash'aina (d. AD 536), which he addressed to his pupil, Theodore, Bishop of Merw. The manuscript, copied in the *Estrangela* script on vellum, contains Books 6, 7 and 8 of the work. British Library Ms. Add. 14661 ff. 34^v, 35^r

Lent by Oriental and India Office Collections, British Library

item 4

The Christian culture of Armenia also provided a home where medical texts from classical Greece survived that otherwise might have been lost. This Armenian manuscript comprises a number of treatises relating to the formation and structure of the human body. The manuscript is copied in four different *Notengir* or notaries' hands of the seventeenth or early eighteenth century. One of the copyists gives his name, place and date i.e. Paul the monk, *Isfahān*, AD 1625. The opening displayed on f. 22r in English translation begins: 'Towards an understanding of the veins Galen says...'

British Library MS. OR 6798 ff. 21^v, 22^r

Lent by Oriental and India Office Collections, British Library

item 5

'Aphorismoí of Hippocrates in the Arabic translation of Ḥunayn ibn Ishāq entitled *fiṣūl Buqrāt*. The manuscript shown here was copied in AD 1562 in clear *naskh*. It contains seven *maqālāt* each concerned with different aspects of general medicine. The opening displayed shows the contents page listing the subjects of the *Aphorisms*.

Haddad Ms. 523 ff. 1^v, 2^r

item 6

Galen wrote a commentary on the *Aphorisms* of Hippocrates in its original Greek called *Ἱπποκράτους ἀφορισμοὶ καὶ Γαληνοῦς εἰς αὐτοῦς ὑπομνήματα*. Shown here is the Arabic translation of Galen's commentary entitled *Tafsīr Jālīnūs li-fiṣūl Buqrāt* transcribed in clear *talīq* during the seventeenth century. The work was translated by Ḥunayn ibn Ishāq and contains, as does the work on which it is a commentary, seven *maqālāt*. The opening displayed is concerned with gynaecology and obstetrics, including observations relating to the miscarriage of children.

WMS OR 64 ff. 59^v, 60^r

item 7

Ilā Ighlūqun, ‘To Glaucōn’, an undated sixteenth-century Arabic translation of Galen’s *Πρὸς Γλαύκωνα θεραπευτικῶν* copied in *naskh*. This work was translated by Ḥunayn ibn Ishāq who stated that Greek physicians of the school of Alexandria classified Galen’s 16 books into seven categories for study by medical students. The first category was regarded as an introduction to medicine, the fourth part of which, *Ilā Ighlūqun*, served as a general treatise on medicine, which Galen wrote for his friend Glaucōn who was about to travel abroad. The opening displayed describes the treatment of fevers.

WMS OR 62 ff. 54^v, 55^r

Rhazes

Abū Bakr Muḥammad ibn Zakariyyā al-Rāzī, known in the West as Rhazes, was born around AD 865 in Rayy in Iran and died around AD 925 in the same area. Although a philosopher as well as a physician, little of his philosophical writings still exist; but his medical writings have, to a large extent, survived. The most famous of these, *al-Ḥāwī*, known to the West in its Latin translation as *Continens*, comprised an encyclopaedia of medicine drawn to a large extent from Greek, Syriac, Indian and Arabic writings. A fine example of this work from the Wellcome Collection is displayed.

item 8

This important copy of *Kitāb al-Ḥāwī* was transcribed in a minute *ta’ liq* at Tabriz in AD 1170. The work, comprising four books, is incomplete possibly due to the premature death of Rhazes. Parts of it appear to be the author’s private notes and experiments, doubtless drawn from case histories of patients under his care which were recorded posthumously by his disciples. Shown here is the beginning of the third book *al-adwiya al-murakkaba* ‘Pharmacopoeia’ preceded by the end of the book II *al-adwiya al-mufrada*, ‘Materia medica’. It is under the title *al-adwiya al-mufrada* that Rhazes refers to Galen’s *περί κράσεως καὶ δυνάμεως τῶν ἀπλῶν φαρμάκων*.

WMS OR 123 ff. 86^v, 87^r

item 9

Kāmil al-sinā’a al-ṭibbiyah, ‘Complete art of medicine’, also known as *al-Malaki*, ‘the royal book’ by ‘Alī ibn ‘Abbās al-Majūsī (d. AD 994).

Commonly known in the West as Haly Abbas, he came from Iran and studied medicine in Shiraz, dedicating his *opus magnum*, *Kāmil al-Sinā* 'a to its ruler 'Aḍud al-Dawla (reigned AD 949–982), the greatest ruler of the Iranian Buwayhid dynasty. From its dedication the work earned for itself the alternative title *al-Malakī*, 'the royal book'; medieval Latin translators called it the *Liber Regis*. It was immediately recognized as a masterpiece although to some extent overshadowed a century later by *al-Qānūn fī al-ṭibb* of Ibn Sīnā. Haly Abbas acknowledged few contemporary physicians and natural scientists and was critical of those who preceded him, including Hippocrates whose writings he considered too brief and even obscure and Galen who he thought long-winded and repetitive. Part of his work he apparently copied from Ḥunayn ibn Ishāq's *al-masā'il al-ṭibb* in which he defined the six essential principles of things not part of human (instinctive) nature. Haly Abbas discussions of *materia medica* and therapeutics are based on the writings of Dioscorides, the first-century Greek physician famed for his *materia medica*, and Galen with additions of indigenous familiar drugs.

This manuscript bears the dates AD 1434 and AD 1437 when it was copied in *naskh*. The opening displayed shows the table of contents from the fifth book, which is concerned with the effect of environment, diet and exercise on health, which partly comprised the six Galenic 'non-naturals'.

WMS OR 55A ff. 132^v, 133^r

item 10

al-Taḥṣīr al-'aqaqīr wa-badalaha, 'a treatise on pharmacy', by Abu ibn l-Qāsim Khalaf ibn 'Abbās al-Zahrāwī who was born c. AD 936 in al-Zahrā near Cordova in Spain. Little is known of Abulcasis, as he was known in the West, but he lived in the golden age of Moorish Spain's intellectual activity. His great medical encyclopaedia *Taḥṣīr li-man 'ajiza 'an al-ta'ālīf*, comprising some 30 treatises on a great variety of medical topics, includes the preparation of drugs by sublimation and distillation, but the most important part is the three books devoted to surgery, largely based on the Greek works of Paul of Aegina (fl. c. AD 640). The importance of Abulcasis was largely overlooked in the Muslim world due to Islam's aversion to surgery, but in Christendom Abulcasis enjoyed immense fame and his work was translated into Latin at an early date.

Here, in this treatise devoted to pharmacy, Abulcasis relates how he drew on Syriac, Greek and Persian sources and later he mentions Galen's writings.

Haddad Ms. 469 ff. 1^v, 2^r

Avicenna

Abū 'Alī al-Ḥusayn b. 'Abd-Allāh ibn Sīnā to give him his full Islamic name, was born in AD 980 near Bukhārā. By the age of 21 he had already written his first philosophical work, but to earn a living he entered the administration where his judgement was appreciated and his counsel sought. Following a court intrigue, Avicenna was forced into hiding and earned a livelihood by medical consultations. He spent the closing years of his life at the court of Iṣfahān, where he became court physician and lecturer on medicine and philosophy. He died at Hamadān in AD 1037, allegedly from overwork and riotous living. Of the two *ḥukamā'* (physician philosophers), Avicenna was the better philosopher and Rhazes the better physician. However, much of Avicenna's writings survive, his most celebrated medical composition being *al-Qānūn fī al-ṭibb*, the ordered summation of all medical knowledge at the time, which formed the basis of medical teaching in both Europe and the East. The numerous commentaries on the work witness the regard in which it was held by successive writers. An example of *al-Qānūn* and two commentaries are displayed.

item 11

al-Qānūn fī al-ṭibb. This monumental encyclopaedia of medicine bears a certain similarity to Galen's writings, to which it refers. There is also a considerable resemblance to Rhazes' earlier *al-Hāwī*, both in the arrangement of the contents and the structure of the indexes. *Al-Qānūn*, however, superseded earlier works, including to some extent those of Galen, and remained supreme for six centuries. It appears in the oldest known syllabus of instruction given in the school of medicine at Montpellier and Chaucer reminds us in the Prologue to *The Canterbury Tales* that no physician should be ignorant of it. The beginning of Book III, *al-amrād al-juz'iyya*, 'Head to Toe Diseases', is displayed. It begins with diseases of the brain and ends with pains of the joints, sciatica and finally diseases of the nails. The manuscript was transcribed in Iṣfahān in excellent *ta'līq* in AD 1632.

WMS OR 155 ff. 218^v, 219^r

item 12

Sharḥ al-Qānūn, 'Commentary on *Kitāb al-Qānūn*', by 'Ala al-Dīn Abū al-Ḥasan 'Alī b. Abī al-Ḥazm al-Qurashī ibn an-Nafīs (d. AD 1298). This is the first complete and by far the most original commentary on Avicenna's celebrated work and for over five centuries was regarded as the key to all the obscurities of *al-Qānūn*. Few manuscripts contain the section *Sharḥ al-Tasrīḥ*, 'Commentary on Anatomy', because Ibn an-Nafīs published this section separately. However, it appears in this manuscript in its correct place in accordance with the author's introductory remarks regarding the content of the work and is extremely interesting from the physiological point of view. At the opening displayed, Ibn an-Nafīs quotes Avicenna's views on the circulation in the heart and lungs and repeats the Galenic fragments included in Avicenna's account. He states that the veinous blood cannot pass from the right to the left ventricle through visible or invisible pores in the septum but must pass through the veinous artery to the lungs, being mingled there with the air, passed through the 'arterious vein' into the left ventricle, then to form the 'vital spirit'. From this observation Ibn an-Nafīs may be considered a forerunner of William Harvey in his discovery of the circulation of blood and as such the greatest physiologist of the medieval world.

The manuscript was copied in the seventeenth century in excellent *naskh* and once belonged to Désiré Tholozan, physician to the Shah of Persia, Nāṣir al-Dīn Shāh (1829–1896).WMS OR 51 ff. 54^v, 55^r

item 13

Sharḥ Qānūnča, 'Commentary on *Kitāb Qānūnča*' a résumé by al-Jaghminī of *Kitāb al-Qānūn*. This once popular medical work written by Maḥmūd b. 'Umar al-Jaghminī (d. AD 1344) is largely dependent on *Kitāb al-Qānūn*. The Arabic commentary shown here was written by 'Alī b. Kamāl al-Dīn Maḥmūd al-Āstarabādhi al-Makki and transcribed in Constantinople in AD 1760. At the opening displayed the author claims he 'selected its subject matter from books of ancient writers such as Hippocrates, Galen, and Ḥunayn ibn Ishāq', but it is clear that his composition was derived from *Kitāb al-Qānūn*, itself dependent on earlier writings. This manuscript transcribed in *naskh* is dedicated to the Ottoman Sultan, *Bāyazīd Khān b. Muḥammad Khān b. Murād Khān*.WMS OR 26 ff. 1^v, 2^r

item 14

Taqwīm al-abdān fī tadbīr al-insān, ‘Tables of the Bodies with regard to the Constitutions’, by Abū ‘Alī Yahya b. Īsā b. ‘Alī ibn Jazla al-Baghdādī (d. AD 1100). This fine manuscript was copied in AD 1585 in *naskh*. The author, of Christian parentage, embraced Islam under the influence of his teacher in AD 1074. He was secretary to the Hanafī *Qāḍī* of *Baghdād* and studied medicine with *Sa’īd b. Hibat Allāh*, court physician to *al-Muqtadī*. The manuscript displayed is written in tabular form with 44 tables containing the descriptions and outlining the treatment of 352 diseases. Ibn Jazla drew much of this information from earlier authorities, including Hippocrates, Dioscorides, Rufus of Ephesus, Oribasius and Rhazes, which he admits in his less well known work *Minhāj al-bāyan fī mā yasta’ miluhu al-insān*, ‘The Pathway of Explanation as to that which man uses’. The opening displayed lists various diseases and their categories arranged in tables.

Haddad Ms. 475 ff. 2^v, 3^r

The following items have kindly been lent by the Science Museum.

Two Persian bronze mortars, fifteenth–eighteenth century. A23205, A97571

Five Islamic pharmacy jars. The decorations on the ceramic jars variously depict flowers, foliage, fish, birds and a house.

A112947, A112948, A112949, A112958

Islamic cupping glass. The inside of the glass was heated with rags, which created a partial vacuum. On then being applied to the skin, it would draw blood to the surface.

A643431

Roman (?) glass flask. Possibly used as an infant feeder.

A85614

FROM EAST TO WEST

THE TRANSMISSION OF ISLAMIC MEDICINE TO
MEDIEVAL AND RENAISSANCE EUROPE

The preservation of the medical tradition of ancient Greece in the Islamic world, and the synthesis that resulted, was a source of interest to the West which was stimulated following the Crusades. During the twelfth and thirteenth centuries, Europe's contact with the lands of Islam increased and many medical works were translated from Arabic and introduced to the West, resulting in an intellectual summer of Islamic influence in medieval Europe. In the work of translating from Arabic into Latin, Spanish Jews, who were fluent in Arabic, were the natural intermediaries. The fall of Constantinople in 1453 and the resulting emigration of many Byzantine scholars to the Italian peninsula gave rise to a full-scale revival of interest in Hellenic culture in the West, which was further aroused by the printing of the Gutenberg Bible in 1454, the date acknowledged as the beginning of the use of moveable type. This revolutionized the world of learning and, for the first time, brought the knowledge of science and scholarship to a much larger public. During the following century the Reformation stirred a fresh interest in the original languages of the Bible. Hebrew was studied and some attention paid to the other Semitic languages, especially Arabic. An increasing interest in Islam was further aroused by expanding trade with the Near East and travel in the Islamic lands, the collecting of manuscripts, and the teaching of grammar and history.

item 1

al-Qānūn fī al-ṭibb of Avicenna in Hebrew translation entitled *ba-Ḳānūn*. Zerariah Gracian (fl. 1280), of a prominent Hispano-Jewish family chiefly connected with Barcelona, translated from Arabic into Hebrew the first two books of *al-Qānūn*. At about the same time Nathan ben Eliezer ha-Me'ati (fl. c. 1290) completed in 1279 in Rome his translation of *al-Qānūn*. Nicknamed the 'Prince of Translators' he is considered one of the greatest translators of medical works from Arabic into Hebrew. Possibly born in Cento in the district of Ferrara, Nathan derived his name Me'ati from the Hebrew equivalent of Cento (hundred).

This manuscript, copied during the seventeenth century in a cursive oriental hand, is displayed at section three of the third book of *al-Qānūn*, which is concerned with diseases of different parts of the body.

Hebrew Ms. A 9 ff. 15^v, 16^r

item 2

Undated Hebrew manuscript transcribed in a cursive Spanish hand copied during the seventeenth century. On the right (f.7v) the final page of excerpts of Gentile da Foligno's extracts from Avicenna's *al-Qānūn*, Book 4 is shown, and on the left (f.8r) questions relating to fever quoting Avicenna and Galen. Gentile da Foligno (d. 1348), known as 'L'anima di Avicenna', is chiefly distinguished for some 90 *Consilia* on general subjects such as fevers and various other ailments *a capite ad pedes*. He frequently quoted his sources, which included among others Galen, Rhazes, Haly Abbas, Avicenna and Maimonides, reflecting the breadth of his learning. During his career he lectured at the universities of Perugia and Padua and occupied the position of personal physician to Ubertino da Carrara (ruler of Padua 1338–1345), finally dying of plague in 1348.

Hebrew Ms. A12, ff. 7^v, 8^r

item 3

Of the several works included in the Hippocratic corpus that were made available to the West in Latin translation, the best known and most widely disseminated was the *Aphorisms*. They were known to the Latin-speaking Church Fathers St Jerome and St Augustine of Hippo, who quoted them in their writings. There is debate as to the earliest translations which generally appeared with a commentary. However, a twelfth-century translation of Burgundio of Pisa (d. 1193) was held in high esteem. It was made from the Greek text and was more highly regarded than the translation from Arabic made by Constantine the African (d. 1087) a century earlier.

The second and third sections are shown, which begin with short statements regarding sleep as an indicator of health and proceed to discuss other topics. The third section begins by discussing weather and its effect on health. The manuscript, in the form of a scroll, was transcribed in a neat gothic book-hand during the late fourteenth century.

WMS 352

item 4

The *Aphorisms* ('Αφορισμοί), in Latin translation known as *Aphorismi*, of Hippocrates were still cited in the nineteenth century as 'the physicians' Bible'. This collection of disjointed and terse statements on the medical art, with the well-known opening phrase: 'Life is short, the art long, opportunity fleeting, experiment treacherous, judgement difficult ...' was made synonymous with the medical art by Dante (*Paradiso*, Canto XI, 1,4). The beginning of the fourth section of this manuscript copied in the late fifteenth century on vellum is displayed, each aphorism beginning with a decorated gilded capital. This section is concerned with purging. WMS 353 ff. 19^v, 20^r

item 5

The pharmaceutical section of *Kitāb al-Ḥāwī*, in Latin translation entitled *Liber divisionum, Antidotarium Synonima*, composed by Rhazes. This encyclopaedic work, devoted to medicine, contained many extracts from Greek and Indian authors along with observations of his own. As a result, Rhazes was acknowledged by both the Islamic world and the West as the greatest clinician of the medieval period.

The entire work *Kitāb al-Ḥāwī*, known in its Latin translation as *Continens*, was first translated by Faraj ben Salīm in 1279 together with a glossary. Of Sicilian-Jewish origin, and a physician, Faraj ben Salīm was employed by Charles of Anjou to translate medical works, and became one of the greatest translators of the time.

The manuscript displayed was transcribed during the fourteenth century in a neat gothic hand, probably Italian, on vellum. The opening exhibited shows the end of treatise 9 and the beginning of treatise 10 dealing with fevers.

WMS 679 ff. 26^v, 27^r

Articella or Ars medica

This was a collection of classical writings brought together in the twelfth and early thirteenth centuries by Salernitan authors to serve as a basic curriculum of medical instruction. At first the collection comprised the *Aphorisms* and *Prognostics* of Hippocrates, a brief Galenic treatise known by various titles including *Ars medica* or *Ars parva*, an Arabic introduction to Galenic medicine composed by Ḥunayn ibn Ishāq, known in Latin by various titles including *Isagoge ad Tegni Galeni*, and

short tracts on the tools of diagnosis employed by the medieval physician. A selection of manuscripts containing these works in Latin translation is displayed.

item 6

One of the earliest recorded copies of *Articella*, mainly transcribed in the twelfth century in southern Italy, with evidence of various later English hands. The manuscript once belonged to the library of Bury St Edmunds Abbey, which contained a distinguished collection of manuscripts. It is thought to have arrived in England within a century of its first transcription in Italy and as such is the first surviving documentary evidence of Greek medicine in England. The library of Bury St Edmunds Abbey was dispersed at the time of the Reformation, but this manuscript bears witness to the importance of the works contained at an important centre of learning in medieval England.

The table of contents is displayed which shows that the manuscript belonged to the Abbey 'Liber Sancti Edmundi Regis', and lists the contents i.e. *Isagoge* of Ḥunayn ibn Ishāq, *Prognostics* and *Aphorisms* of Hippocrates, *De urinis* of Theophilus Protospatharius, *De pulsibus* of Philaretus. The absence of Hippocrates' *De regimine acutorum* and Galen's *Ars medica* is notable. The preceding folio contains a fragment of Aristotle's *Topica*.

WMS 801A ff. IV^v, V^r.

item 7

Galen's commentary on the *Aphorisms* of Hippocrates in the Latin translation of Constantine the African (d. 1087), which forms part of *Articella*. Constantine the African was the first great translator from Arabic into Latin. Many of his translations were medical writings. Having travelled extensively in the East he became proficient in Arabic and for a time taught at the school of Salerno, the earliest scientific school in Christendom. He enabled the school to take advantage of his Islamic experience as well as its own Greek tradition and so to become the earliest distributing centre of medical ideas in Europe.

The text was copied around the middle of the fourteenth century in a rounded gothic script, possibly English. Blue and red decorated capitals alternate at the beginning of each paragraph, each aphorism prefaced with a blue decorated capital followed by Galen's commentary which starts with a red capital. The opening displayed discusses obstetrics and gynaecology with particular emphasis on childbirth.

WMS 84 ff. 27^v, 28^r

item 8

A Latin translation possibly made by Constantine the African, of an original Arabic work entitled *Masā'il fī al-ṭibb li-l-muta'allimīn* based on Galen's *Ars parva*. It remained incomplete until re-edited by Ḥubaysh ibn al-Ḥasan, nephew and pupil of Ḥunayn ibn Ishāq. The work was used as an introduction to *Articella* and achieved considerable popularity. In translation it was much abridged and appeared under a number of titles, one of the best known being *Isagoge ad Tegni Galeni*.

The copy displayed was transcribed c. 1375 in a clear gothic hand on vellum. The opening exhibited describes the relationship of the four elements, earth, air, fire and water, to the physical world and their effect on the humours of the body i.e. black bile, blood, yellow bile and phlegm. WMS 85 ff. 1^v, 2^r

item 9

Ha-Ḳanūn of Avicenna, the Hebrew translation of *al-Qānūn fī al-ṭibb* by Joseph Lorki and Nathan ben Eliezer ha-Me'ati. Nathan ben Eliezer ha-Me'ati, the first of a distinguished family of translators, flourished in Rome during the thirteenth and fourteenth centuries where he translated *al-Qānūn* from Arabic into Hebrew. The printer, Azriel Gunzenhausen, with his father, Joseph ben Jacob, came from Gunzenhauser in southern Germany and set up their printing press in Naples, which produced 12 volumes between 1487 and 1492. They were pioneers in Hebrew typography and employed a distinguished group of typesetters and proof readers, including Asher ben Perez Minz who collaborated in the printing of *ha-Ḳanūn*, of which more copies have survived than any other Hebrew incunabula.

The volume displayed contains part of the first book and books 3 and 4 of *ha-Ḳanūn*. The opening exhibited shows a section from the fourth book relating to fevers. EPB 573 ff. 146^v, 147^r

item 10

al-Qānūn fī al-ṭibb of Avicenna printed in Rome at the Typographia Medicea in 1593. This was the first printing of the Arabic text of this celebrated Islamic medical work which, for several centuries, enjoyed considerable influence over medical instruction in both the East and the West. It was not unknown for physicians to learn Arabic in order to have a better understanding of the works of Avicenna.

The Typographia Medicea, which was founded by Cardinal Ferdinand de

Medici in 1573, had as one of its main functions the task of reconciling the dissident Eastern churches with Rome by printing Bibles and other religious literature in oriental scripts. The distinguished punch cutter, Robert Granjon, was commissioned to engrave punches for various exotic types including Arabic, an example of which is shown. The finest example of the Medici Press, which closed in 1596 when its patron left Rome to become Grand Duke of Tuscany, was an illustrated edition of the Gospels in Arabic issued in 1590, 1591.

The end of Book 1 fourth *Fenn* describing general treatment followed by Book 2 which begins with an index to the contents of this book concerning *materia medica* is shown.

M.S.L. Purchase pp. 112,113

item 11

al-Qānūn fī al-ṭibb in the Latin translation of Gerard of Cremona. Although the importance of *al-Qānūn* for medical instruction in both the East and the West had previously been unquestioned, the Renaissance brought a strong reaction against it. Leonardo da Vinci (1452–1519) rejected the anatomy of Avicenna but for want of another vocabulary used Arabic terms. Paracelsus (1493–1541) burnt a copy of the *Canon* at Basle and William Harvey (1573–1657) dealt it a final blow by publishing his discovery of the major circulation in 1628.

Gerard of Cremona (c. 1114–1187), whose translation this is, although Italian, spent most of his life in Toledo where he translated over 70 works, a formidable record by any standard. It is thought that he possibly directed a school of translators in Toledo and that some seemingly later translations were ascribed to him due to his reputation as the translator *par excellence*. From this translation of *al-Qānūn* a number of new technical terms were introduced to the West which were derived from Arabic e.g. saphena (*sāfun*), vena basilica (*al-bāsilīq*).

The volume displayed was printed in Venice in 1489/90 by Dionisio Bertocchi. The opening exhibited shows the beginning of treatise 1 from book 3, which is concerned with the diseases of the brain and nerves. It is preceded by an index to the section.

EPB 571. sigs q4^v & A1^r

item 12

The Greek text of Galen's commentary on the *Aphorisms* of Hippocrates entitled *Ἱπποκράτους ἀφορισμοὶ καὶ Γαληνοῦ εἰς αὐτοὺς ἐπομνήματα*, printed in Venice in 1525 by Aldus Manutius. Aldus Manutius was the most distinguished printer working in Italy at the beginning of the sixteenth century.

He was particularly interested in publishing Greek classics and became famous for the excellence of a number of his editions. Of the 49 first editions of Greek authors printed up to the time of Manutius' death no fewer than 30 came from his press. It was unfortunate, however, that he based the design of his Greek type on a cursive style with ligatures and contractions and without the simplicity essential for a readable type. The opening displayed shows the beginning of the second section of Book 5, in which sleep in relation to health is discussed.

EPB 2507 ff. 107^v, 108^r

item 13

Liber nonus ad Almansorem, as the name suggests, is the ninth chapter of *Kitāb al-Mansūri* known in its Latin translation as *Liber Almansoris*. It was composed by Rhazes and dedicated to Mansūr ibn Ishāq ibn Aḥmad ibn Asad, prince of Kirmān and Hurāsān. The work was particularly well known in the West as *Liber Nonus* and repeatedly translated. It is primarily concerned with practical medicine and is arranged by different parts of the body *a capite usque ad pedes*, much of which Rhazes based on earlier writings of Galen, Oribasius and Paul of Aegina. The commentary of Syllanus de Negris, a physician of Cremona, who lived towards the end of the fourteenth century and was professor of medicine at the university of Padua, is shown.

This exemplar was printed in Venice in 1490 by Bonetus Locatellus for the publishing house of Octavianus Scotus. The work of Locatellus on behalf of the firm of Octavianus Scotus was exclusively concerned with scholarly works chiefly pertaining to medicine, philosophy, law and theology. His name disappears after 1509, when he may have died or retired. There was then an interruption in the publishing activities of the Scotus firm which only resumed during the sixteenth century, when the services of other printers were used.

The opening displayed discusses the treatment for hernia, gout, sciatica and arthritis with the commentary of Syllanus de Negris.

EPB 5451 inc. 4 a 14 ff. 70^v, 71^r

item 14

Kāmil al-sinā'a al-ṭibbiyah composed by Haly Abbas in the Latin translation of Stephen of Antioch entitled *Liber totius medicina necessaria continens* and printed by J Myt at Lyons in 1523. The translation of Stephen of Antioch was completed in 1127 and first printed in 1492 in Venice under the title

Liber regalis dispositio nominatus.

The title page is displayed which shows delightful woodcuts of Hippocrates, Haly Abbas and Galen and the signature of a previous owner, Leonardo Botallo of Asti, physician to Francis I of France. The volume subsequently came into the possession of Turquet de Mayerne, physician to James I of Great Britain, and John Channing, the distinguished eighteenth-century editor of Abulcasis.

M.S.L. Purchase 1^r

item 15

The Latin translation, entitled *Cyrurgia cum cauteriis et aliis instrumentis*, of the final treatise from the general medical compendium *Kitāb al-tasrīf li-man ‘ajiza ‘an al-ta’lif* composed by Abulcasis (936–1013). Abulcasis, a native of Cordova, lived during the golden age of Moorish Spain when intellectual activities including the natural and mathematical sciences reached their climax. Cordova and al-Zahrā’, from where Abulcasis took his epithet, formed a metropolitan area, which, apart from Constantinople, was unmatched for intellectual excellence in Europe at the time. In this part of his compendium, Abulcasis was concerned to revive the art of surgery as taught by the ancients. This is the first complete and illustrated treatment of the subject. It contains illustrations of surgical and dental instruments and was the leading text on surgery during the medieval period.

The exemplar displayed was printed in Venice for the printing house of Octavianus Scotus and completed on 27 January 1500/01. The opening displayed from part two concerns dentistry and disorders of the throat. A number of dental instruments are illustrated.

EPB 3017 ff.16^v, 17^r

The following items have kindly been lent by the Science Museum.

Selection of recently made copies of Arabic surgical instruments. They are of the type depicted in Arabic manuscripts such as Abulcasis’ *Cyrurgia cum cauteriis et aliis instrumentis* (*item 15*). They were carefully replicated from original drawings for the Institute of the History of Medicine and Medical Research in Delhi, but could not actually be used.

1981–889

MEDICINE IN INDIA

AN EXAMPLE OF COEXISTENCE AND COOPERATION

Over two thousand years ago a national system of medicine covering all aspects of health and disease was developed in India. It was known by the Sanskrit word *Ayurveda* which means 'the prolongation of life'. The most ancient Indian medical works extant – encyclopaedic compilations of medical knowledge – date from between 200 BC and AD 200. They discuss in detail the types of illness suffered, their causes, diagnosis and treatments, the conduct and training of doctors and the preparations of herbal remedies. With increase in communication these works became familiar outside the subcontinent. They were translated into Arabic and quoted by physicians in their writings in Persia and the Near East.

The Muslim invasions of the twelfth century brought to India the Islamic system of medicine known as *unānī* medicine, based on the ancient Greek theories of Hippocrates and Galen which had been developed by Islamic philosophers and physicians such as Rhazes and Avicenna. *Ayurveda* and *Unānī* medicine were not mutually exclusive, but enjoyed a complementary coexistence.

With the Portuguese, who occupied Goa on the west coast of India in 1510, came ideas and influences from the West. Later, the Jesuits, associated with Portuguese trading, introduced aspects of European science to the Mogul court of Akbar (1556–1605). The Dutch and French East India Companies brought with them scientists and physicians who introduced many of the new ideas and advances of seventeenth-century Europe and, at the same time, brought back from India medicinal plants and knowledge hitherto unknown in the West. In 1600 the English East India Company was established. This was to have far-reaching implications for the subcontinent where British influence became by far the strongest of Western influences. In the centuries that followed there was an interchange between Western and indigenous systems of medicine, which today exist side by side complementing each other both in the subcontinent and in the West.

Suśruta

Between the 5th and 4th centuries BC Suśruta compiled an abridgement of *Ayurveda* in sections in the form of dialogues which were re-edited a century or so later. Suśruta is thought to have been a member of a commission of eight sent to study medicine under Dhanwantari, Raja of Benares. The work, known as *Suśruta Samhita*, covers a wide range of medical topics including pathology, embryology, anatomy, therapeutic and surgical treatment, and toxicology. It gives special emphasis to surgery, describing techniques and surgical instruments, with pre- and post-operative care. Suśruta was translated into Arabic under the title *Kitāb Suśrud* and referred to by Rhazes.

item 1

The replacement of the nose by plastic surgery was described by Suśruta in chapter 16 of the section called *Sūtra-sthāna* from the *Suśruta Samhita*. Suśruta's description shown here in Sanskrit describes how a flap of skin in size corresponding to the mutilated nose was raised from the cheek and sutured in place after being correctly shaped. The operation was dressed with red sandal wood powder and white cotton soaked with sesame oil.

Sanskrit MS 827 f. 125^r

On 9 October 1794, an operation to replace the nose, hitherto unknown in the West, was reported in *The Gentleman's Magazine*.

Cowasjee, a Mahratta, who had served in the British army as a bullock driver, was captured by Tipu Sultan and mutilated by having his nose and one of his hands cut off. Twelve months later his nose was replaced by an operation thought to have been practised for centuries in India and similar to that described by Suśruta.

The operation was carried out by placing a thin plate of wax against the truncated nose which was flattened and then laid against the forehead. An outline was cut around the wax on the forehead. A slip between the eyes was preserved to allow circulation between the old and new parts. An incision was then made in the stump of the nose which passed around both *alae* and went through the upper lip. The skin was then brought down from the forehead and being twisted half round its edge was inserted into this incision so that the nose was formed with a double hold above and with its *alae* and *septum* below fixed in the incision.

After various minor adjustments, a dressing was applied and the new nose healed into place and was secure. The scar on the forehead after a time became scarcely noticeable. (See: *The Gentleman's Magazine*, 64(2), 1794, pp. 891, 892)

item 2

An engraving of Cowasjee made from a painting by James Wales which was commissioned in 1794 by two British surgeons, James Trindley and Thomas Cruso.

The diagrams show:

- fig. 1* *the plate of wax when flattened*
- figs 2, 3* *the plate of wax in the form of the nose*
- fig. 4* *1. figure of the skin taken from the forehead*
 2, 3. form of the alae of the new nose
 4. septum of the new nose
 5. slip left undivided
 6. incisions into which the edge of the skin is engrafted

Stipple engraving by W Nutter, 1795, after James Wales.

Iconographic Collections

item 3

Description in Sanskrit from the seventh chapter of the *Sūtra-sthāna* of the *Suśruta Samhita* concerning Ayurvedic surgical instruments. Surgical instruments were classified in two groups in *Ayurveda* – the blunt instruments (*yantras*) and the sharp (*śastras*). In this chapter the blunt instruments are described. There were 101 *yantras* but the hand was considered the most important, since the use of all instruments was dependent on it.

Sanskrit MS 827, ff. 94^v, 95^r

item 4

Description of *Rauwolfia serpentina* from chapter 5 of *Kalpa-sthāna* of *Suśruta samhita* where it is referred to by its Sanskrit name *Sarpagandhā* as a drug that should be administered on its own or with two or three others as an antidote to poison.

Sanskrit MS 8 27f. 544^v

item 5

Rauwolfia serpentina, referred to in *Suśruta samhita* as *sarpagandhā*, a word derived from the Sanskrit *sarpa* a serpent and *gandhā* a snake. *Suśruta* prescribed the root as a decoction used as an antidote for bites of poisonous reptiles and insect stings, but it was also used in India as a sedative. During the latter half of the twentieth-century scientific analysis has isolated some of the alkaloids in *Rauwolfia serpentina*, the most important being reserpine, which was identified in 1952. This has now established its place in the treatment of hypertension and anxiety. The hand-coloured engraving is a plate from H A van Rheede tot Draakestein, *Hortus Indicus Malabaricus* Amsterdam, 1678–1703, vol. 6, Tab. 47.

Iconographic Collections

Unānī medicine

The *Unānī*, meaning Greek system of medicine, was the medicine practised in classical Greece which had been preserved and nurtured by the Arabs. With the Islamic conquests of India and the establishment of Mogul rule came *ṭibb-i unānī*, which functioned alongside the indigenous ayurvedic system. Muslim rulers patronized practitioners of the *unānī* system, who were known as *Hakims*, as well as practitioners of ayurvedic medicine, or *Vaids* as they were called.

item 6

This Panjabi manuscript devoted to *unānī* medicine entitled *Khair marukh* was composed in verse by a poet called *Isā* and completed at Lahore in 1744. The exemplar displayed was copied in 1850 in *nasta'liq*. The treatise describes various diseases and disorders along with their cures. The opening displayed details various types of tuberculosis (*dīqq*) and the different oils and extracts from plants used as a cure.

Panjabi MS 1, ff. 55^v, 56^r

item 7

The coexistence of the ayurvedic and *unānī* systems of medicine in medieval India was due to some extent to the similarity of both systems, especially in relation to the humours of the body. Although the ayurvedic system was based on the three humours, air, bile and phlegm, and *unānī* developed the four-humour hypothesis of blood, phlegm, and yellow and black bile, practitioners of both systems attempted to correlate the two. The manuscript displayed is an example of this syncretism of the two systems. *Kavi-tarang* was composed by *Sītārām* in 1703, the copy exhibited dating from the late eighteenth or early nineteenth century and written in *devanagari*. In the opening shown, the author explains how physicians came from a foreign land to Hindustan and compared their medical system with that of Caraka and other ayurvedic writers.

Hindi MS 34, ff. 1^v, 2^r

item 8

The Portuguese arrived in India in 1510 when they captured Goa. Later, in 1534, Garcia d'Orta (1501–1569), a Jewish physician, was appointed personal physician to the fleet bound for India at that time. Possibly d'Orta left Portugal out of scientific curiosity and adventure and to escape religious persecution.

From his observations, d'Orta composed his *Coloquios dos simples, e drogas he cousas medicinais da India...* printed by J de Endem in Goa in 1563. This work has the distinction of being the first medical work printed in India, and only the third book to be printed on any subject in the subcontinent. The book written in the form of a dialogue includes a classic description of Asiatic cholera hitherto unknown in western Europe. D'Orta consulted with native physicians and was not afraid to contradict the accepted medical authorities of the time. D'Orta's observation of plants constitute the beginnings of pharmacognosy as we know it today, scrutinizing almost all the important drug plants and species of the East. The importance of these studies can be best appreciated when it is remembered that Europe had little or no information on any of these drugs. Indeed *Nux vomica*, from which strychnine is derived, was entirely unknown.

EPB 7250, title page

item 9

Christobal d'Acosta (c.1515–1580), a member of a prominent Jewish family,

embarked for India in 1568 as physician to the Portuguese Viceroy. During his sojourn in India he met Garcia d'Orta whose *Coloquios* he much admired. However, he noted the lack of illustration in the *Coloquios*, which he made good in his own publication *Tractado de las drogas, y medicina de las Indias orientales, con sus debuscada al bivo*, printed in Burgos in 1578. Much of the text was lifted from d'Orta's *Coloquios*. Illustrated here is the *Piper nigrum* (black pepper) which d'Orta studied in some depth (Colloquy 46) and which was little known at that time in the West. EPB 6960, p.19

item 10

Jacobus Bontius (1592–1631), *De Medicina Indorum*, Lib.IV, Leyden, Franciscus Hackius, 1642.

Jacobus Bontius was the youngest son of J Garaert de Bondt, the first occupant of the chair of medicine at Leyden University. In 1626 he was appointed doctor–apothecary and surgical inspector in the Dutch East Indies and requested by Leyden University to collect herbs in India for study in the university's botanical garden. Although a close student of Garcia d'Orta and Christobal d'Acosta he recognized that they accepted many facts second-hand.

At the opening displayed Bontius describes beri-beri disease, so called from the Singhalese word meaning weakness. This is one of the first descriptions of the disease endemic in India and the East. EPB 14567/A, p.115

item 11

G E Rumphius, *D'Amboinsche rariteitkamer...* Amsterdam, F. Halma, 1705, frontispiece engraved portrait.

Georgius Everhardus Rumphius (c.1627–1702) shown at his desk towards the end of his life when blind. Rumphius, sometimes known as 'the Pliny of India', was sent by the Dutch East India Company to the island of Amboina – part of modern Indonesia – to study useful and otherwise remarkable plants on the spice islands. Chiefly remembered as the author of *Herbarium Amboinense*, a classic repeatedly published, he described 'all such plants, herbs, animals, etc., as I came across during my time of residence in India...' *Rauwolfia serpentina* was apparently first illustrated in the *Auctuarium* of this work published in 1755. EPB 45125/D

continues page 36

COLOUR
PLATES

*from
the exhibition*



al-Qānūn fī al-tibb of Avicenna, transcribed AD 1632.

See item 1.11

ferunt ōra uō gūt purgare
quid estā supiora hyemē uō
inferiora.

4 *Sub rante et ancone molette et formant.*

5 **G**raciles & facile uomētes
purgare sri' timentes hyemē.

6 **D**ifficile uomētes & medic
carnosos & īfūs timentes estāte.

7 **P**isicos uō metuentes ad
sripres fricias.

8 **M**elancolicos uō infē uehe-
mentius ead rōe ōia appo-
nentes.

9 **P**urgare estāte quid sriora



Engraving of *Rauwolfia Serpentina*.
See item 3.5



Colour woodcut by Utagawa.
See item 4.13



Water colour by Zhou Pei Qun.
See item 5.1



Johan Adam Kulmus, *Tabulae anatomicae* (left).

Facsimile of this work in translation (right).

see items 6.1 & 6.2

British India

'The Governor and Company of Merchants of London trading into the East Indies' was founded by Queen Elizabeth I on 31 December 1600. The first expedition of four ships under James Lancaster left Torbay towards the end of April 1601 to return from Sumatra with a cargo of spices in 1608.

Captain Hawkins obtained an imperial firman from Jahangir to build a factory at Surat in 1612, which marks the beginning of British settlement in India. Although the early British presence in India met with opposition from the Portuguese and Dutch, and later the French, British influence ultimately prevailed and in its wake Western medicine took root in the subcontinent. Following the Indian Mutiny, the administration of India was transferred from the Company to the British Crown. The first Viceroy was appointed on the 1 November 1858 at a grand durbar held at Allahabad, and Queen Victoria proclaimed Empress of India. In 1947 India gained its independence as a republic within the British Commonwealth.

item 12

Portrait of John Woodall, line engraving by G Glover, 1639.

In 1613 John Woodall (1556–1643) was appointed Chirurgeon General to the East India Company. He had already served as surgeon to Lord Willoughby's regiment in 1591 and subsequently spent several years in Germany, Poland and France before returning in 1603 to London, where he apparently acquired a large practice. Although widely travelled and holding a position in the East India Company, Woodall never in fact visited the subcontinent. On his appointment as Chirurgeon General he was in his own words charged with the duties of 'ordering and appointing fit and able surgeons and surgeons' mates for their ship and services and also fitting and furnishing of their surgerie chests with medicines, instruments and other appurtenances thereunto, which credit and weightie charge so nearly concerning the lives of their servants reposed in him, instigated him to employ all his endeavours to answer thus so great trust imposed upon him'.

Woodall fell from favour and was discharged from his duties as Chirurgeon General but continued to furnish the surgeons' chests till 1643 when he resigned. He died later that year.

Iconographic Collections

item 13

John Woodall (1556–1643), *The surgeons mate or a treatise discovering faithfully and plainly the due contents of the surgeons chest, the uses of the instruments, the vertues and operations of the medicines, the cures of the most frequent diseases at sea*. London, E Griffin for L Lisle, 1617.

In the opening shown, Woodall advocates fresh fruit juice in the prevention and cure of scurvy over a century before James Lind published his treatise on scurvy in 1753.

EPB 6774, pp.184,185

*Hospitals and medical
education in European India*

The first hospital established by Europeans in India was founded by the Portuguese following the capture of Goa in 1510. It was administered by the Jesuits and from 1703 provided rudimentary medical education which later developed into the School of Medicine and Surgery founded in 1842.

The East India Company established the first hospital under its auspices in Madras in 1664. This hospital was later used by the military, but others were erected in the eighteenth and nineteenth centuries in Madras, Bombay and elsewhere in British India.

The first institution of some importance for medical instruction was a School of Native Doctors founded with the government's approval in Bengal in 1822. In 1827 medical classes in the *unānī* system of medicine began in the Calcutta Madrassa and the Sanskrit College began to teach the ayurvedic system. These institutions of medical instruction came to an end in 1835 when a committee appointed by Lord William Bentinck, Governor General of India, recommended a medical college for instruction in the various branches of medical science in the most approved European system. The college was established and the first examination held on 30 September 1838. The Medical College Hospital was established in 1848 and the Medical College affiliated to the University of Calcutta in 1857. The Calcutta Medical College is the oldest in India.

item 14

Lack of text books in the vernacular was a great problem to the teaching of Western medicine in India. The problem was addressed by Frederic John Mouat (1816–1897), who was Assistant Surgeon in the Bengal Army,

Secretary to the Council of Education of Bengal and professor of *Materia Medica* and Medical Jurisprudence in the Calcutta Medical College. In the introduction to his anatomical atlas Mouat wrote: 'During the past year much attention has been paid to the want of class-books in their own vernacular language for the pupils of the military school... The only works upon European medicine extant...are...chiefly in the Nagree character which is only understood by Hindu native doctors...'. Mouat was assisted in the preparation of his atlas by Moonshi Nusseerudin Ahmed. The opening displayed shows the anatomical structure of the shoulder, arm and hand described in Urdu.

An atlas of anatomical plates of the human body accompanied with descriptions in Hindustani by Fred J Mouat... assisted by Moonshi Nusseerudin Ahmed
Calcutta, Bishop's College Press, 1846. EPB F.294, p. 4

item 15

Calcutta General Hospital

Lithograph by W Wood Jr, April 1829.

Iconographic Collections

item 16

A selection of commercially produced ayurvedic proprietary medicines used in the treatment of various disorders.

The following items have been kindly lent by the Science Museum.

Selection of ayurvedic surgical instruments. Eighteenth or nineteenth century(?). It is doubtful that they were all made for actual use. They include forceps, knives, probes, scissors and hooks.

A623639, A623645, A623653, A623665, A623668, A623673, A623677, A623678

Two brass measuring spoons. These would have been used in the preparation of herbal medicines in India.

A624171, A624172

Goa stone and holder, decorated in gold and silver. Eighteenth century.

Stones found in animal intestines were thought to have medicinal properties, especially against poisons. Goa stones, named after the place they were manufactured, were imitations of the natural stones. They were made from a paste of clay, silt, crushed shell, amber, musk and resin, rolled into a ball and coated in gold leaf. Many were exported to Europe.

A642466

Mahogany medicine chest. *c.* 1860. The label inside the lid reads 'Sold by Bruce & Co. Wholesale and Retail Chemist & Druggist, VEPERY Madras'. It was made by Springveilen and Company, London, and was sent for sale in India. It now contains eight bottles, a leech tube, a hand balance and apothecary weights and three dental instruments.

A14860

‘BRINGING THE SMALLPOX’

SMALLPOX INOCULATION, ORIENTAL AND OCCIDENTAL

For centuries immunization against smallpox had been practised by variolation in the East before its introduction to the West. However, by the beginning of the eighteenth century a number of reputable British and European physicians became aware of this and reported their observations of immunization which they had witnessed when visiting the Near East. The Scots physician, Dr Peter Kennedy, described variolation in his book, *An Essay on External Remedies*, published in 1715, and Dr Emanuel Timoni’s account of variolation as practised in Constantinople was reported to the Royal Society in 1714. However, variolation was not seriously accepted until introduced by Lady Mary Wortley Montagu (1689–1762), wife of Edward Wortley Montagu, who was sent as British Ambassador to the Ottoman Porte in 1716. While in Turkey, Lady Mary became much interested in variolation and had her son, Edward, inoculated in 1718. It was, however, the interest which Lady Mary aroused in the Prince and Princess of Wales on her return to England and the subsequent inoculation of Princess Amelia and Princess Caroline that made inoculation fashionable in England.

Due, however, to risk of infection to those inoculated and to those around them, variolation was not widely accepted by the medical profession in Britain until Jenner’s discovery of vaccination with cowpox was published in 1798. Variolation was nevertheless widely practised in different ways but on the same principle by many of the peoples of Asia and Africa. It had long been recognized that those who contracted smallpox never experienced a recurrence. From this observation it became obvious that a mild occurrence of the disease gave immunity from it. This was achieved by injecting the matter from infected pustules, which activated a mild infection and resulted in immunization. The Arabs among others practised this technique and referred to it as ‘bringing the smallpox’.

item 1

The first detailed account of smallpox to have survived was composed by Rhazes in the tenth century. It was a masterpiece of Islamic medicine in which he carefully described the symptoms of smallpox and measles. The

work in its original Arabic entitled *Kitāb al-jadārī wa-l-ḥaṣba* was translated at an early period into Syriac and Greek. Thirteen translations from Greek into Latin were printed between 1498 and 1586 under the title *De pestilentia*. The first translation direct from Arabic into Latin did not appear until 1747 under the title *De variolis et morbillis*. The famous translation of John Channing (c.1702–1775), an apothecary, described as ‘natu et civitate Londinensis’ on the title page was printed in London by William Bowyer in 1766. This remained the definitive translation until the beginning of the present century.

The opening displayed shows the printed Arabic text with the Latin translation of Channing exhibited at the beginning of the first chapter, in which Rhazes discusses the causes and symptoms of smallpox.

EPB 43795/B, pp. 10, 11

item 2

William Sherard, the British Consul in Smyrna, to whom the Royal Society turned for collaboration of Dr Timoni's account of variolation, made enquiries from his friend Dr Pilarino, who had previously lived in Constantinople where he had witnessed variolation as early as 1701. In reply to Sherard, Pilarino published a short treatise printed in Venice by Gabriel Hertz in 1715 under the title *Nova et tuta variolis excitandi per transplantationem methodus, nuper inventa et in usum tracta*. This was forwarded by Sherard to the Royal Society where it was introduced at the meeting held on 24 May 1716 and reprinted in the Society's *Philosophical Transactions* that year. Although a more critical account than that of Timoni, both reported the same method of engrafting the matter taken from the pustules of an infected patient into a healthy patient, so activating a mild occurrence of the disease and consequent immunization.

Pilarino's treatise is displayed showing the dedication of his work to William Sherard, British Consul in Smyrna.

EPB 41266/A, sig. A4

item 3

A letter written by Lady Mary Wortley Montagu, wife of Edward Wortley Montagu, Ambassador Extraordinary to the Ottoman Porte, from Adrianople to her friend Mrs Sarah Chiswell of Nottingham in which she described the practice of variolation which she had observed in Constantinople. She described the scratching open of the vein with a large

needle and putting 'into it as much of smallpox venom as could lie on the head of a needle'. On her return to England, Lady Mary had her daughter Mary, later Countess of Bute (1718–1794), inoculated, the first person inoculated in Great Britain.

Letters of the Right Honourable Lady M-y W-y M-e. London, J Osborne & T Griffin, 1785. EPB 37182/A, pp. 86, 87

item 4

Lady Mary Wortley Montagu (1689–1762), wife of Edward Wortley Montagu, the first Viscount, ambassador to Constantinople, depicted in oriental dress and turban. Lithograph by Villain after A Devéria after an enamel miniature by C F Zincke. n.d. Iconographic Collections

item 5

Following the initial excitement of its introduction, variolation as practised in the Near East and introduced to Europe during the first decades of the eighteenth century was not widely practised due to risk of infection. It was not until the end of the century that the major discovery of vaccination against smallpox was made by Edward Jenner (1749–1823), who observed that a person inoculated with the cowpox virus, instead of smallpox, would develop a mild case of cowpox and then recover, having thereby achieved immunity from smallpox although, curiously enough, not from cowpox.

He published his discovery in his epoch-making book *An inquiry into the causes and effects of the variolae vaccinae*, London, 1798, which is displayed. The opening exhibited describes how the matter was taken from the hand of a dairy maid (see illustration displayed) who had been infected by her master's cows and was then inserted into the arm of a healthy eight-year-old boy. Jenner reported that the boy reacted to the inoculation, but when subsequently inoculated with the matter from the pustules of a smallpox victim experienced no ill effects.

EPB Special Collection, p. 32, plate 1

item 6

Jenner depicted vaccinating an infant on the knee of his mother; another female in the foreground and cow with cowherd in the background. Brown ink wash, French (?), c. 1820. Iconographic Collections.

item 7

Variolation had been practised in Africa for many centuries and was known in some parts as 'buying the smallpox'. In 1728, Cassem Aga, the ambassador from Tripoli to Great Britain and a Fellow of the Royal Society, described inoculation against smallpox as it was then practised in Tripoli, Tunis and Algiers. In his account he described how he, with his brothers and sisters, were brought to the house of a girl infected with smallpox where they were all inoculated by engrafting matter from pustules of the smallpox victim into an incision on the back of the hand between the thumb and forefinger. A mild infection followed resulting in immunization. The opening displayed relates the ambassador's account from Johann Caspar Scheuchzer, *An account of the success of inoculating the Small-Pox in Great Britain, for the year 1727 and 1728...to which are subjoined... II a relation of the like Method of giving the Small-Pox as it is practised in the Kingdoms of Tunis, Tripoli and Algier*. London, J Peele, 1729.

EPB 46991/B, pp. 60, 61

item 8

In his report to the Royal College of Physicians, John Holwell (1711–1798), a survivor of the Black Hole of Calcutta, commended the Indian technique of inoculation and its success which he claimed had been used in India to prevent smallpox 'since time out of mind'. Although the method fell short of Jenner's use of cowpox, the use of matter drawn from the pustules resulting from inoculation was an improvement on the method introduced to the West by Lady Mary Wortley Montagu, which used matter from the pustules of a smallpox victim with the resultant risk both to patient inoculated and those around. Holwell's account published in 1767 is displayed.

J Z Holwell, *An account of the manner of inoculating for small-pox in the East Indies with some observations on the practice and mode of treating that disease in those parts*. London, T Becket & P A de Hondt, 1767.

EPB 29240/B, p. 1

Item 9

Dr James Moore (1763–1834) made a thorough investigation into the origins and treatment of smallpox in various parts of the world. He claimed that its antiquity in India was witnessed by the sacred books and mythology of the Hindus. In the opening displayed Dr Moore describes how inocula-

tion was practised from remote antiquity by Brahmins. The skin was rubbed by a piece of cloth which afterwards became the prerequisite of the Brahmin. A few slight scratches were made on the skin and some cotton which had been soaked for a year in variolous matter moistened with a few drops of holy water drawn from the Ganges was bound on the incisions. Prayers were recited to propitiate Sitala, the goddess of smallpox. The bandage was removed in six hours and the infection developed after which the patient recovered and was immunized.

The folding pate shows Sitala, goddess of smallpox, with two uplifted crooked daggers threatening to strike on the right and left. Before her stand a band of the executors of her vengeance. On the far left there is a group of men bearing the marks of smallpox; bells hang from their waists and they wave black feathers. They are preceded by musicians with drums who are supplicating the pity of the furious deity. Behind the goddess, on the right there advances a bevy of smiling young women who are carrying on their heads baskets with offerings in gratitude for their lives and their beauty having been spared. There is, besides, a little boy with a bell at his girdle who seems to be carrying something from the right arm of the goddess. This action may possibly be emblematic of inoculation. EPB 37364/B, pp. 220, 221

item 10

Inoculation against smallpox using Jenner's method of cowpox vaccination did not reach India until 1802. Since cowpox did not affect cattle in India, the matter generated by the pustules for vaccination was unavailable and had to be imported from Europe. However, due to the length of time taken to reach India by sea, it was not possible to keep the vaccine in an active state except by transferring it overland. John Shoolbred (d.1831) describes here how the Earl of Elgin, British Ambassador in Constantinople, having had his own seven-day-old infant vaccinated had some vaccine forwarded to Bombay. This however failed and it was not until early in 1802 that vaccine reached Bombay via Baghdād and Basra through a chain of inoculated patients. The first person to be inoculated in India was a three-year-old girl, Anna Dusthall, in 1802. From this patient the precious cowpox vaccine was sent to Poona, Surat, Hyderabad, Ceylon and Madras. Later that year vaccination reached Bengal and Calcutta.

Report on the progress of vaccine inoculation in Bengal from the period of its introduction in 1802 to the end of the year 1808... by John Shoolbred. London, Honourable Company's Press, 1805. EPB 13260/P, pp. 2 & 3

item 11

The successful inoculation of Anna Dusthall in Bombay provided the inoculum matter that enabled vaccination to be brought to several places including Ceylon. Thomas Christie (1773–1829), Medical Superintendent in Ceylon, published in 1811 a description of how the vaccine reached Ceylon. The opening displayed shows a table of the first patients inoculated with the varicella matter taken from a twelve-year-old boy, John Sybille, who had been inoculated with the vaccine brought from Bombay.

T Christie, *An account of the ravages committed in Ceylon by small-pox previously to the introduction of vaccination; with a statement of the circumstances attending the introduction, progress and success of vaccine inoculation in that island*. Cheltenham, J & S Griffith, 1811. EPB 17770/B, pp. 36, 37

item 12

Smallpox has long been known in China. It was first described by Ko Hung in the third century AD. He referred to it as Hun pox because it was thought to have been introduced into China at the time of the conflict with the Huns at Nan yang. Inoculation was probably introduced around the first millennium, several different methods being used. These included smallpox scabs rubbed down in water and inhaled, the pulverizing of smallpox scabs for inhalation through a silver tube or placing the undergarment of an infected child on a healthy one. Great care was always taken to use only material from a slightly infected patient, so minimizing the risk of infection. These methods are described in the 60th volume of *I-tsung chin-chien*, 'The Golden Mirror of Medicine', a compendium of medical works composed by 84 scholars under the editorship of Wu Ch'ien in compliance with an imperial order and first published in 1742.

The exemplar displayed was printed in Shanghai in 1892 and shows the beginning of the section in which the various methods of smallpox inoculation practised in China prior to the introduction of Jenner's vaccination are described.

Chinese Collection 3 III (viii), vol. 60 ff. iv, 1'

item 13

The first official record of an epidemic of smallpox in Japan dates from 735 AD – it is claimed to have come from Korea. Through the centuries the Japanese employed various methods to control the dreaded disease, such as hanging ropes of plaited straw at the entrance to homes. The woodcut displayed shows Chinsei Hachiro Tametomo, a celebrated historical figure of the twelfth century, whose enemies had exiled him to the island of Oshima. There, according to legend, he repelled the demon of smallpox who was preparing to invade the island. In response to his ferocious threats, the demon shown in the left of the picture is reputed to have been diminished to the size of a pea and floated out to sea.

Colour woodcut printed by Utagawa Yoshikazu, dated from the two censorship seals 1847/1852.

Iconographic Collections

Following the success of vaccination in India, the East India Company sent a supply of vaccine to Canton. It arrived there in October 1803, but turned out to be a failure. It was not until the spring of 1805 that Jenner's inoculation using cowpox was successfully introduced to China, when a Portuguese merchant, acting on the orders of the King of Spain, inoculated members of his ship's company during the voyage from the Philippines. Dr Alexander Pearson (d. 1836), one of the East India Company's most distinguished surgeons, was present in Macao at the time and he, along with Portuguese practitioners in Macao, proceeded to vaccinate some of the local population, usually drawn from the poorest in the community. The populace were already aware of the importance of inoculation, so that the successful introduction of Jenner's vaccination provided a firm foothold for Western medicine in China.

item 14

Alexander Pearson's treatise on the European style of vaccination in Chinese entitled *Ying-chi-li kuo hsin-ch'u chung-tou ch'i-shu* is displayed. The translation was by Sir George Staunton (1781–1859), son of Sir George Staunton (1737–1801), historian of the celebrated embassy of Lord MacCartney to the Emperor of China in 1792. This is the second edition of the translation printed in Shanghai in 1805. The illustrations in the opening exhibited show the place in the arm where vaccination should take place, the ivory spatula with which inoculum is removed, and the knife

with which the scratches on the skin were made and the inoculum matter impregnated.

Chinese Collection 53, ff. 1^v, 2^r

item 15

In the *Report of the National Vaccine Establishment for the year 1816* it was reported from Canton that 'Dr Alexander Pearson of the Factory of the East India Company writes that vaccination is very favourably received there and is extended throughout the whole province of Canton. He has sent us a Chinese treatise on vaccination, in the original, together with a translation by Sir George Staunton.'

EPB 38297/D/1. p. 3

item 16

Proof of the popularity which vaccination had reached in China by 1817 is witnessed by the publication in that year of the first Chinese tract on the subject, *Yin-tou lüeh*, composed by Ch'iu-Hsu, a pupil of Pearson. Ch'iu-Hsu included the tract of 1805 but added his own observations and incorporated many Chinese ideas. Here the 'discovery of vaccination is ascribed to a western foreign doctor named Chan-na (Jenner) and the story of its journey from Manila to Macao by ship which had children on board for the purpose of keeping up the supply of lymph, is related'.

The opening displayed shows the knife with which scratches on the skin were made and a spatula with which inoculum is removed. A patient is also shown with appropriate places on either arm where vaccination could take place. This is the edition of 1895.

Chinese Collection 51 ff 41^v, 42^r

The following items have been kindly lent by the Science Museum.

Two Chinese powder insufflators. These instruments were used to apply a powder to the body's surface.

A645066, A645067

‘CHINESE MEDICINE WAS AT LEAST AS GOOD AS THAT OF EUROPE’

EARLY WESTERN ACQUAINTANCE WITH THE TRADITIONAL MEDICAL SYSTEMS OF CHINA AND THE FAR EAST

From the sixteenth century a constant stream of Christian missionaries, particularly Jesuits, began to reach China where their scientific knowledge won them the esteem of the Chinese people and the favour of the imperial court. Two of their number, Johann Adam Schall von Bell (1591–1666) and Ferdinand Verbiest (1623–1688), became Directors of the Board of Astronomy in Peking where they had control of observatories and calendrical affairs. The missionaries were much concerned with social and medical matters, tending both the poor and sick, and at the same time observing the medical practices indigenous to China and adjacent islands, particularly Japan, which from a very early period had come under the influence of Chinese civilization.

From their writings Europe first became acquainted with acupuncture, moxa, massage and the Chinese mode of feeling the pulse by way of diagnosis. As early as 1669 the great philosopher Leibniz regarded ‘Chinese medicine at least as good as that of Europe’ which was, for the time, not far wrong. However, although the West had been familiar with these systems of traditional Chinese medicine for three centuries, and they had been followed with some enthusiasm in France, where a flourishing literature had developed, especially with regard to acupuncture, it is only in recent decades that traditional Chinese medicine has achieved wider recognition and become almost something of a cult in Europe and America.

The Pulse

Feeling the pulse – or rather the pulses, since the Chinese system makes a careful distinction between the pulses at different points of the radial artery and connects them with the chief organs – was the most important method of diagnosis. There is, indeed, so little incongruity between the Chinese and Galenic systems that when Europeans became aware of the Chinese doctrine through the work attributed to Andreas Cleyer in 1682, many regarded it as more accurate and refined than that of Galen.

item 1

A physician of the imperial court taking a lady's pulse on an expensive home visit. Her wrist is supported on a small red bolster (red is a lucky colour); the doctor touches the pulse only with his finger tips, without looking at the patient.

Water-colour on rice-paper by Zhou Pei Qun (early nineteenth century).

Iconographic Collections

item 2

In about the fourth century AD, a celebrated treatise on the pulse was published by Wang Shu-ho, court physician during the Western Chin dynasty. The work is a summary of all the traditional methods and knowledge of this subject at the time, together with his own observations. Since Chinese physicians set great store by the pulse as a means of diagnosis, the work of Wang Shu-ho on the pulse was held in high regard. It has, however, been confused both by Chinese doctors and Western translators with a later work on the pulse composed in the tenth century. This mistake occurs in the 1867 edition of a commentary by Chang Shih-hsien of the Ming which is displayed. The illustration exhibited shows the taking of the pulse by someone else (above), by one's self (below).

Chinese Collection 10 I, ff. 16, 17

item 3

Father Michael Boym (1612–1659) was a Jesuit priest whose familiarity with medicine was in no small part due to his father's influence, the latter being physician in ordinary to King Sigismund of Poland. From his sojourn in China, Boym left an important work which is a translation of part of Wang Shu-ho's work on the pulse, a treatise on the aspect of the tongue in different diseases and an exposition on simple drugs prepared by missionaries according to the directions of Chinese authors. The whole manuscript was dispatched via Batavia to Europe in 1658 but due to a disagreement between the Jesuits and the Dutch East India Company, who blamed the Jesuits for the failure of an embassy they had sent to Peking in 1656, the author's name was suppressed and the book published by Andreas Cleyer, *Protomedicus* to the Company, under the title *Specimen Medicinae Sinicae*. An authentic edition bearing the correct author under the original title *Clavis medica ad Chinarum doctrinam de pulsibus* appeared in Nuremberg in 1686.

The plates shown, which were added to the 1682 edition, depict to the left, the two modes of taking the pulse at the wrist according to the Chinese fashion; the upper diagram shows the pulse being taken by another, the lower the patient taking his own pulse. The illustration to the right shows the lungs described according to the Chinese tradition as having six leaves.

EPB 18088/B, plates 5 & 6

item 4

Louis XIV of France sent a Jesuit scientific mission to Peking in the seventeenth century, a member of which, Father Harvieu, wrote a translation of what he thought was the celebrated fourth-century treatise on the pulse composed by Wang Shu-ho but was in fact the later tenth-century Chinese text on the pulse similar to the earlier. It was published in 1671 at Grenoble under the title *Les secrets de la medecine des Chinois, consistent en la parfaite connaissance du pouls*. Title page displayed.

EPB 27847/A

item 5

Father Jean Baptiste du Halde (1674–1743) was responsible for the organization and recording of the correspondence of Jesuit missionaries working in foreign parts, especially China. He was also secretary to Father Tellier, confessor to Louis XIV. His work, *Description géographique, historique, chronologique, politique et physique de l'empire de la Chine et de la Tartarie chinoise*, published in Paris in 1735, was regarded as the most authoritative description of China at the time. In it du Halde included Harvieu's translation of *Mo Chüeh*, the tenth-century text that he confused with the earlier celebrated work on the pulse by Wang Shu-ho.

The English translation of du Halde's work is displayed at the beginning of his translation of the treatise on the pulse. *A description of the Empire of China and the Chinese-Tartary, together with the kingdoms of Korea, and Tibet...from the French*. London, J Thomas for E Cave, 1738–1741.

EPB 21087/D, vol. II, pp 184,185

item 6

The Chinese practice of taking the pulse, which was well received in Europe, was first made known in England by Sir John Floyer (1649–1734), an eminent physician. Floyer was the first to count the number of beats in a

minute by the use of a watch, a practice hitherto unknown. In his work, *The physician's pulse watch or, an essay to explain the old art of feeling the pulse and to improve it by the help of a pulse watch*, published in London in 1707 and dedicated to Queen Anne, Floyer publicized in England for the first time the Chinese mode of taking the pulse. The opening displayed shows the beginning of the Appendix which comprises an excerpt made from Boym's work attributed to Andreas Cleyer, under the title *Specimen Medicinae Sinicae*, which contained a translation of part of Wang Shu-ho's celebrated treatise on the pulse.

EPB 22784/B/1, p. 255

Acupuncture

Acupuncture was one of the chief resources of the Chinese physician in his treatment of disease. It was a procedure which involved inserting into the skin a number of fine needles at precise points on the body indicated by charts worked out through the centuries. Each particular group or series of points, following a given line over the body's surface, is connected with a visceral organ and gives access, as it were, to the treatment of that organ by remote control. Acupuncture was regarded as a method of restoring the two opposing forces of the body, *yang* and *yin*, to equilibrium, although no satisfactory scientific explanation has yet been found to explain its efficacy. At an early date acupuncture was carried from China to Japan. When it first reached Europe in the seventeenth century some interest was shown but it has only been in recent years that the West has taken a serious interest in it, with the medical profession accepting its importance for the treatment of a number of disorders.

Western physicians first came in contact with acupuncture at Deshima, a small Dutch trading post established with the permission of the Japanese authorities in 1641 on an island in Nagasaki Bay. A large Chinese colony, where acupuncture was practised, adjoined Deshima and many Japanese skilled in the art offered their services in the streets of Nagasaki. In spite of the severe restrictions placed on foreigners, early Dutch physicians wrote detailed descriptions of Chinese and Japanese medical practice which they later published and made known to the West.

item 7

A facsimile reprint from a Japanese hand-painted woodcut of the Dutch settlement at Deshima, Nagasaki by Toshimaya Bunjinemon from *Dawn of Japanese Science*, Tokyo, 1978.

item 8

Acupuncture chart: standing figure showing the series of points for controlling diseases of the heart and the sexual organs.

Water-colour, eighteenth century.

Iconographic Collections

item 9

Acupuncture chart: standing figure showing the series of points controlling the kidneys. Water-colour, eighteenth century.

Iconographic Collections

item 10

Willem ten Rhijne (1649–1700), the distinguished Dutch physician, was born in Deventer and studied at the celebrated medical school in Leiden University. He sailed from Holland in 1673 and sojourned first in the Cape Colony where he recorded his observations on the Hottentots. From there he travelled to Batavia and was then sent by the Dutch East India Company to Nagasaki. As the first Western trained physician to visit Japan, he made detailed descriptions of Japanese and Chinese medical practice which he later published in his *Dissertatio de arthritide: Mantissa schematica: de Acupunctura* in 1683. In it he describes acupuncture as useful for headache, vertigo, cataracts, apoplexy, stiff neck, nervous convulsions, epilepsy, catarrh, rheumatism, melancholia, and a host of other disorders.

Displayed:

i Chart of a Chinese figure showing the sites for the application of acupuncture and moxa with the *yang* meridians.

EPB 43818/B/1, fig.3, p.160

ii Photograph of chart of a Japanese figure with meridians and sites for the application of acupuncture and moxa viewed from the front of the body.

EPB 43818/B/1, fig.5, p.165

item 11

Engelbert Kaempfer (1651–1716) came to Japan at the climax of a distinguished career of scholarship and travel. Born in Lemgo in the duchy of Lippe in Westphalia, Kaempfer studied philosophy, medicine and literature at several European universities including Cracow, Königsberg and Uppsala. In his book *Amoenitatum exoticarum politico-physico-mediciarum* published in Lemgo in 1712 he describes different aspects of Japanese culture devoting a chapter to the cure of colic by acupuncture as practised by the Japanese. The illustration displayed shows the acupuncture points on the body of a patient to be cured of colic, and the needles and implements used. EPB 30811/B/1, p. 582

item 12

The distinguished German physician Lorenz Heister (1683–1758) published his important work *Chirurgie in welcher alles was zur Wund-Artzney gehört ...* in 1743; it was reprinted some 21 times and translated into six languages. At the opening displayed the use of acupuncture is discussed. The importance of the work made it one of the chief vehicles for the dissemination of the technique in Western Europe.

Apart from France, however, where acupuncture was employed by the leading French physicians from the early decades of the nineteenth century, the rest of Europe took little interest in the practice until recent times.

EPB 28191/B, p. 428,429

Moxa

The basis for the use of moxibustion in the treatment of disease is similar to that of acupuncture. The dried leaves of the mugwort (*Artemisia vulgaris*) were rolled into small pellets, ignited, and applied to the skin points until redness and blistering occurred, so providing an outlet for the toxic agent causing pain or inflammation. Alternatively, the tinder was enclosed in a paper tube and waved gently over the part concerned to produce a mild heating effect. In many respects this resembles the use of cauteries which was practised in Europe until the eighteenth century.

In Japan greater emphasis was placed on moxibustion than on acupuncture. The Japanese applied burning cones both to others and to themselves without the services of a practitioner. The Japanese generally indulged far more in self-medication than the Chinese, partly due to their

sensitivity to minor deviations from a complete sense of well-being and their deep faith in medicine.

item 13

Nineteenth-century Japanese block printed book comprising text with commentary relating to the duties of women in the home. The opening displayed shows a mother giving moxa treatment to her daughter as one of the duties of the housewife.

Japanese Collection

item 14

Title page of Steven Blankaart's (1650–1702) treatise, *Verhandelinge van het podagra en vliegende jigt...*, published in Amsterdam in 1684 by J ten Hoorn.

This volume contains a Dutch translation of ten Rhijne's work describing moxibustion and acupuncture with a golden needle for the treatment of diseases, particularly gout. The illustration shows the gouty patient in a wheelchair where his bandaged foot rests on a platform; to the right the patient is in bed, his foot being bandaged, while the physician drops a medicinal fluid into a spoon; finally to the lower left the patient is treated by moxibustion. The bearded healer wears an oriental, presumably Chinese, costume and ignites the moxa with an incense stick.

EPB 13986/A, frontispiece

item 15

Following the departure of Kaempfer in 1692 there was little Western contact with Japan until the arrival of Carl Pieter Thunberg (1743–1828) in 1775. This distinguished Swedish scientific explorer, physician and botanist left much valuable information on Japanese culture, the state of Japanese medicine and the attitude of the Japanese towards Western learning at the close of the eighteenth century. In his work, *Travels in Europe, Africa and Asia made between the years 1770 and 1779*, volume IV, *Travels in the Empire of Japan and the islands of Java and Ceylon...* he describes how moxa was used by everyone, young and old alike, both for treating disorders and preventing them. It was regarded as especially beneficial for gout and rheumatism. He also described acupuncture in the treatment of *senki*, an acute diarrhoeal disease which Japanese physicians attributed to over-indulgence in sake. Thunberg's descriptions are shown here from the second edition published in London in 1795.

EPB 75293, pp. 74,75

The following items have kindly been lent by the Science Museum.

Two sets of acupuncture needles.

A624244, A624556

Selection of equipment and material used in applying moxa.

1988-1426 to 1988-1429

THE OPENING OF THE FAR EAST TO WESTERN MEDICINE

Although the West became aware of traditional Chinese medical practices through the activities of the Jesuits, they do not appear to have advanced Western medical practice in China. This did not occur until the nineteenth century when the physician, Dr Alexander Pearson of the East India Company in China introduced Jennerian vaccination against smallpox in Macao in 1805 (Section IV). Dr Thomas Colledge (1797–1879), also in the service of the East India Company, established an ophthalmic hospital in Macao in 1827 and an American, Dr Peter Parker (1804–1888), who was the first medical missionary sent to China, set up a hospital and dispensary in Canton in 1835. Benjamin Hobson (1816–1878), the first British Protestant medical missionary to work in China, did much to gain acceptance for Western medicine by translating Western medical texts into Chinese. By 1915 there were 29 medical schools in China, 16 of which were sponsored by missionary organizations.

In Japan, Philipp von Siebold (1796–1866) first taught Western medicine in Japanese after his arrival in Nagasaki in 1823. On Siebold's departure six years later, Western medicine was well established in Japan with instruction conducted by Japanese scholars. Much attention was given to surgery, pharmacology, chemistry and related subjects during the *Rangaku* (Dutch study) era. By 1868 when, under the Meiji government, Japan was opened to Westerners and her citizens allowed to travel abroad, she already had a good foundation on which further to develop the education of her inhabitants along Western lines.

item 1

Johann Adam Kulmus (1689–1745), having studied medicine at Halle, Leipzig, Strasbourg and Basle, visited Holland and subsequently lectured on medicine and physic at the Danzig gymnasium. His principal work, *Tabulae anatomicae*, was first published in German in Danzig in 1722. It was a concise introduction to anatomy accompanied by plates, its clarity making it a very appropriate choice as the first Western medical book to be translated into Japanese.

The copy displayed was published in Amsterdam in 1732 and shows the arterial system and the portal vein.

EPB 31661/B, plate 18

item 2

The publication of *Kaitai Shinso*, the first European work to be printed and published by Japanese in Japan, and therefore a landmark as such, was crucial for the advance of Western medicine since it demonstrated that the anatomical theories of China which were accepted in Japan were incorrect. *Kaitai Shinso* was a Japanese translation of Kulm's *Tabulae anatomicae* made by Maeno Ryōtaku (1733–1803), who was much interested in languages and learnt Dutch from Dutch translators in Nagasaki, and by Sugita Gempaku (1738–1818), who practised western medicine at Edo. Having procured a copy of *Tabulae anatomicae*, they compared the anatomical plates it contained with the remains of an executed criminal whose body they dissected. They soon realised how inaccurate Japanese anatomy was and endeavoured, with the limited lexicographical tools available, to translate Kulmus's work. After some initial difficulties the entire translation was published with plates in five fascicles in 1774. A facsimile edition of 1978 is displayed showing the arterial system and the portal vein.

Japanese Collection, fasc.5, ff. 26^v, 27^r

item 3

The emergence of Maeno Ryōtaku and Sugita Gempaku as teachers of Western studies, together with the publication of *Kaitai Shinso*, marked the beginning of an era in which Western influence steadily grew in Japan. The period prior to the opening of Japan to the West in 1868 is known as *Rangaku* (Dutch study).

In 1823 Philipp Franz von Siebold (1796–1866), a young physician, arrived in Nagasaki, commissioned by Baron van der Capellen as a scientific observer and collector. Siebold taught medicine and science and often, instead of a fee, received botanical and other specimens of Japan's flora and fauna. Siebold was the first physician systematically to teach and demonstrate the practice of Western medicine and surgery in Japan and performed many Western style operations which received much acclaim. Siebold left Japan in 1830 having been expelled by the Japanese government for purloining a map forbidden to foreigners. However, he left behind a talented team of students and former students to carry on the work of practising and teaching Western medicine.

Siebold's three main publications were: *Nippon*, a documentation of his six years in Japan; *Fauna Japonica*, the first comprehensive description of the

fauna of the East to be published in the West; and *Flora Japonica, sive plantae quas in imperio japonis* which he prepared with Joseph Zuccarini, a botanist with whom he worked in Leiden. This work was published in Leiden between 1826 and 1870 and includes descriptions of a number of Japanese plants such as the hydrangea and peony, which were first cultivated in Europe from Siebold's acquisitions in Japan. The opening displayed shows the hydrangea with Siebold's description. EPB F.489, vol. 1, p.118, tab. 63

item 4

Reproduced replicas of surgical instruments used by Siebold including scissors, forceps, tweezers, scalpel, probe and saw.

item 5

Dr Thomas Colledge attending a patient in the Ophthalmic Infirmary, Macao. The patient has a pair of spectacles pushed to her forehead. She is attended by a servant. A figure which appears to be an amanuensis stands behind a table with surgical instruments on it while another patient awaits treatment to the left of the picture.

Aquatint by W Daniell after a painting by George Chinnery, 1834.

Iconographic Collections

item 6

Robert Morrison, DD (1782–1834) was sent to China by the London Missionary Society and arrived in Canton in 1807. Before leaving England he had received some medical training and knowledge of the Chinese language which he made a further study of on his arrival. It was his literary and linguistic skill in the Chinese language which was his main contribution to British missionary work in China. His expertise was also used by the government and he was appointed Chinese translator to the East India Company. His three major works were *A Grammar of the Chinese language* published in 1815; *A Translation of the Old and New Testaments* in collaboration with the Revd William Milne published in 1823, and *A Dictionary of the Chinese Language* completed in 1815 and published in Macao by P P Thoms at the East India Company's Press between 1815 and 1822. This was a pioneer work in Chinese lexicography.

A table of radicals with the beginning of the dictionary and the first radical are displayed.

EPB 37678/C, vol.1, pt.1, pp. 10, 11

item 7

Letter to Dr Morrison from the Secretary of East India Company's Select Committee informing him that the Portuguese authorities in Macao had directed the cessation of his printing press since he had published certain works contrary to the teaching of the Roman Catholic church.

Throughout Morrison's career there was constant doctrinal conflict with the Roman Catholic church and little support from Portuguese missionaries working in China.

Letter dated Macao, 22nd June 1833.

Western MS 5828/2

Benjamin Hobson (1816–1873)

Benjamin Hobson, having received his medical education at London University, joined the London Missionary Society and left for China in 1839. On his arrival he developed the foundations of medical missionary work already established by Colledge, Parker and others in Macao, Hong Kong and Canton. He introduced the latest techniques of Western medicine and pioneered medical education for the native population. To this end, Hobson translated a miscellany of Western texts into Chinese for which he is best remembered. In 1847 he married as his second wife Mary Morrison, daughter of Dr Robert Morrison.

item 8

Photograph portrait of Benjamin Hobson (1816–1873).

Two of his translations are displayed.

item 9

Ch'üan-t'i hsin-lun, 'Outline of Anatomy and Physiology', translated by Benjamin Hobson and first published in 1850. It was a great success and republished at the insistence of the Viceroy of Canton, who had the illustrations recut, printed separately, and made up into rolls according to Chinese custom. Other editions followed. The 1851 edition is displayed with anatomical drawings of the cranium exhibited.

Chinese Collection 23A, ff. 8^v 9^r

item 10

Fu-ying hsin-shu, 'Treatise on midwifery and diseases of children', translated by Benjamin Hobson and printed in Shanghai in 1858. This treatise gave straightforward and concise directions for the safe delivery of children and other matters concerned with paediatrics which, with its illustrations, was to prove most useful. The practice of midwifery in China was left entirely to women who, in cases of difficulty, were utterly helpless.

The opening displayed shows different stages of parturition.

Chinese Collection 35 I D, ff.6v, 7r

Dr Philip Cousland (1860–1930)

item 11

The translations of Dr Benjamin Hobson and his list of medical terms in English and Chinese enjoyed a long period of success following their publication between 1850 and 1858. Over the next 50 years a number of Chinese translations of Western medical texts appeared, but the lack of uniformity in terms used by the various translations was a serious hindrance to medical education in China. The China Medical Missionary Association addressed this problem and appointed a Terminology Committee in 1890 to draw up a standard list of medical terms in Chinese. The Committee had as its chairman, Dr Philip Cousland, a pioneer in translating Western medical text books into Chinese. He took a leading part in the preparation of the *English-Chinese Medical Lexicon*, which was first published in 1908. In the preface to the seventh edition published in 1933, some three years after Cousland's death, it is said of him '*Monumentum erigit aere perennius*', with reference to his contribution to the advance of Western medicine in China through his lifelong work of translating and medical lexicography. The title-page of this edition is displayed.

PB Chinese 298

Henry S Wellcome China Publication Fund

item 12

The publication in 1908 of an *English-Chinese Medical Lexicon* was the culmination of 50 years of medical missionary work beginning with Hobson. It eventually achieved the recognition of the Chinese government and so obtained an accepted standard for Chinese medical nomenclature.

Henry Wellcome already knew of the work of the China Medical Missionary Association when Dr Cousland wrote to him in 1907 requesting financial assistance for the publication of the Association's translations. Wellcome responded with a promise of £1000 to fund the translation of Western medical texts selected by the Association which met with Wellcome's approval.

i Typescript copy of Dr Cousland's reply acknowledging the gift of £500 from Wellcome dated 10 October 1908. This advance of £500 was the first part of the £1000 Wellcome promised the Association.

CMAC, Wellcome Institute Archives W1/72

ii Deed of Trust drawn up between Henry Wellcome and the China Medical Missionary Association dated 11 November 1910, in which the donor was 'desirous of furthering the extension of medicine, surgery, bacteriology, chemistry, pharmacy, nursing and other allied sciences and arts as taught and practised in Europe and America in accordance with the latest scientific advances'. The fund was known as the 'Henry S Wellcome China Publication Fund'. The fund was to be a self-perpetuating one which generated income from the sales of the translations it financed. This income would in turn be added to the fund to be used from time to time to publish succeeding editions or to publish new books as might be approved.

The Deed is signed under the seal of Henry Wellcome and Philip Cousland. An example of the translations published with funds of the Henry S Wellcome Publication Fund is displayed.

CMAC, Wellcome Institute Archives W1/72

item 13

H A Hare, *A Textbook of Practical Therapeutics*. The second Chinese edition translated by James A Ingram from the thirteenth English edition. This was one of the initial publications of the China Medical Missionary Association, made under the Henry S Wellcome China Publication Fund in 1911.

PB Chinese 272 title-page

item 14

'The Hospital of Universal Benevolence', Hangchow.

This hospital developed from missionary concern for opium addicts and had

its origins in an opium refuge first opened in 1869. However, it was soon realised that this was quite inadequate and that a larger general hospital was essential. Under the leadership of Dr Duncan Main (1856–1934) of the Church Missionary Society, who came to China as a medical missionary in 1881, funds were raised and the foundation stone of a new hospital known as ‘The Hospital of Universal Benevolence’ was laid in 1883. The hospital was formally opened the following year. It provided beds for 110 patients, which were soon filled, separate wards for women and various training facilities.

A sketch of the hospital together with part of the architect’s plans are displayed

Sir James Cantlie (1851–1926)

item 15

Sir James Cantlie, the distinguished Scots physician, surgeon, teacher and founder of the College of Ambulance in London, had a far-reaching influence on the teaching of Western medicine and the training of doctors in China. He arrived in Hong Kong, in 1887 and became a co-founder of the College of Medicine in Hong Kong which he served as dean for seven years. He was the first to introduce European trained nurses to China and sat on the government sanitary board which drew up sanitary rules for the colony.

Draft of a letter to Li Hung Chang, the distinguished Viceroy of China written by Sir James Cantlie and dated 12 July 1889. In his letter Cantlie thanks the Viceroy for agreeing to be patron of the newly established Hong Kong College of Medicine.

WMS 6931, No.96

item 16

Fragment of a cash book listing patients Cantlie treated in Hong Kong during July 1889. The social range of Cantlie’s patients is reflected in this opening which includes the colony’s governor and a ‘Scotch oriental coolie’.

WMS 1463

Dr Sun Yat-sen (1866–1925)

item 17

Photograph portrait of Dr Sun Yat-sen.

Sun Yat-sen, founder of the Chinese Republic, was the first to graduate from

the Hong Kong School of Medicine in 1892. It was during this time, when Cantlie was dean, that a lifelong friendship developed between the two. Cantlie was later to become Sun's biographer.

Sun was a leading figure in the struggle to bring democracy to his country, which resulted in his fleeing China. While a refugee, he came to London in 1896 and stayed with the Cantlies. It was at this time he was kidnapped and held prisoner in the Chinese Legation but due to the efforts of Cantlie and Sir Patrick Manson he was subsequently released. Sun was eventually to become provisional president of China on New Year's Day 1912.

The story of Sun Yat-sen is one of mutual respect between two men, one belonging to the culture of the East, the other to that of the West; a respect both men found to be an enriching experience and of mutual benefit.

*The front cover shows images from Chang Shih-hsien, Wang Shu-bo i'u chu... (above),
and Andreas Cleyer, Specimen medicinae sinicae. See items 5.2 & 5.3*

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